

CLAIMS

5 1. A toner resin composition comprising a linear polyester resin (A) containing a C₃ to C₁₀ aliphatic diol component and a linear polyester resin (B) containing a C₃ to C₁₀ aliphatic diol component which differs from said linear polyester resin (A), the (parts by mole of the C₃ to C₁₀ aliphatic diol component in the linear polyester resin (B))/(parts by mole of the C₃ to C₁₀ aliphatic diol component in the linear polyester resin (A)) in the case of designating the total acid component of the resin as 100 parts by mole being in a range of 0.5 to 10.

10 2. A toner resin composition comprising a linear polyester resin (A) containing a C₃ to C₁₀ aliphatic diol component, a linear polyester resin (B) containing a C₃ to C₁₀ aliphatic diol component which differs from said linear polyester resin (A), and a vinyl-based resin (C), the (parts by mole of the C₃ to C₁₀ aliphatic diol component in the linear polyester resin (B))/(parts by mole of the C₃ to C₁₀ aliphatic diol component in the linear polyester resin (A)) in the case of designating the total acid component of the resin as 100 parts by mole being in a range of 0.5 to 10.

15 3. A toner resin composition as set forth in claim 1, comprising the linear polyester resin (A) in an amount of 3 to 50 mass%.

20 4. A toner resin composition as set forth in claim 2, comprising the linear polyester resin (A) in an amount of 3 to 50 mass%, the linear polyester (B) in an amount of 10 to 96 mass%, and the vinyl-based resin (C) in an amount of 1 to 40 mass%.

25 5. A toner resin composition as set forth in any one of claims 1 to 4, wherein the linear polyester resin (A) has a softening temperature in a range of 150 to 220°C.

30 6. A toner resin composition as set forth in any one of claims 1 to 5, wherein a softening temperature of the linear polyester resin (A) is 20°C or more higher than

the softening temperature of the linear polyester resin (B).

7. A toner resin composition as set forth in any one of claims 1 to 6, wherein the C₃ to C₁₀ aliphatic diol component is a component containing at least one type of a diol selected from neopentyl glycol, propylene glycol, and cyclohexane dimethanol.

8. A toner resin composition as set forth in any one of claims 1 to 7, wherein the linear polyester resin (A) is a linear polyester resin (a) which contains, when the total acid component is designated as 100 parts by mole, the C₃ to C₁₀ aliphatic diol component in an amount of 10 to 60 parts by mole, has a glass transition temperature of 50 to 75°C, has a mass average molecular weight Mw of 25,000 to 100,000, and has no melting point, and the linear polyester resin (B) is a linear polyester resin (b) which contains, when the total acid component is designated as 100 parts by mole, the C₃ to C₁₀ aliphatic diol component in an amount of 55 to 100 parts by mole, has a glass transition temperature of 40 to 70°C, has a mass average molecular weight Mw of 2,000 to 10,000, and has no melting point.

9. A toner resin composition as set forth in any one of claims 1 to 8, wherein a glass transition temperature measured after conversion into a toner is 45 to 70°C, the softening temperature is 90 to 140°C, a melt viscosity at 120°C is 100 to 5000 Pa·s, and a mass average molecular weight Mw is 8,000 to 60,000.

10. A toner containing a toner resin composition as set forth in any of claims 1 to 9 as a binding resin.

11. A toner linear polyester resin (a1) comprising a C₃ to C₁₀ aliphatic diol component in an amount of 10 to 60 parts by mole with respect to 100 parts by mole of the total carboxylic acid component, having a glass transition temperature in a range of 50 to 75°C, having a mass average molecular weight Mw in a range of 25,000 to

100,000, not having a melting point, having a softening temperature in a range of 150 to 220°C, and having an acid value of 10 mgKOH/g or less.

5 12. A toner use linear polyester resin (a1) as set forth in claim 11, wherein the C₃ to C₁₀ aliphatic diol component is one or more types selected from neopentyl glycol, propylene glycol, and cyclohexane dimethanol.

10 13. A toner use linear polyester resin (a1) as set forth in any of claims 11 to 12, wherein the dicarboxylic acid component and diol component are esterified in a range of 250 to 280°C of temperature and in a range of 200 kPa to 500 kPa of pressure, then in a range of 250 to 300°C and at a temperature 5°C or more higher than an esterification reaction temperature under 1 kPa or less 15 of pressure for condensation polymerization.

14. A toner containing a toner use linear polyester resin (a1) as set forth in any of claims 11 to 13 as a binding resin.

20 15. A method of production of a toner linear polyester resin (a1) comprising causing a dicarboxylic acid component and a diol component to react at a temperature of a range of 250 to 280°C and under a pressure of a range of 200 kPa to 500 kPa by an esterification reaction, then causing condensation 25 polymerization at a temperature in the range of 250 to 300°C and 5°C or more higher than the esterification reaction temperature under a pressure of 1 kPa or less.

30 16. A toner linear polyester resin (b1) comprised of a linear polyester resin comprised of a dicarboxylic acid component and a diol component, comprising an aromatic dicarboxylic acid in a total carboxylic acid component in an amount of 50 mol% or more, containing a C₄ to C₈ aliphatic diol in an amount of 60 parts by mole or more with respect to 100 parts by mole of the total 35 carboxylic acid component, having a glass transition temperature in a range of 40 to 70°C, having a mass

average molecular weight M_w in a range of 4,000 to 10,000, not having a melting point, and having a softening temperature in a range of 90 to 120°C.

5 17. A toner linear polyester resin (b1) as set forth in claim 16, wherein the C_4 to C_8 aliphatic diol is neopentyl glycol.

18. A toner linear polyester resin (b1) as set forth in claim 16 or 17, wherein the acid value is a range of 0.5 to 30 mgKOH/g.

10 19. A toner comprising a toner linear polyester resin (b1) as set forth in any one of claims 16 to 18 in the toner in an amount of 5 mass% or more.

15 20. A toner comprising a binding resin and a coloring agent, said toner characterized in that the binding resin is mainly comprised of polyester resin, the polyester resin contains a polyester resin (X) and a polyester resin (Y), a blending ratio of the polyester resin (X) and polyester resin (Y) is 5/95 to 95/5 (weight ratio), the polyester resin (X) is a linear polyester resin with a mass average molecular weight M_w of 25,000 to 100,000 and a softening temperature of 150 to 220°C, the polyester resin (Y) is a linear polyester resin with a mass average molecular weight M_w of 2,000 to 10,000, and a minimum fixing temperature is 130°C or less and a 25 range of fixing temperature is 40°C or more.

21. A toner as set forth in claim 20 wherein the polyester resin (Y) contains a polyester resin having a softening temperature of 100°C or less.

30 22. A toner as set forth in claim 20 or 21, wherein the polyester resin (Y) contains at least two types of polyester resin and the difference in softening temperature of those two types of polyester resin is 5°C or more.

35 23. A binding resin used in the toner set forth in claims 20 to 22.